

WONDERS OF NATURAL PRODUCTS IN MALAYSIA

FREDDY KUOK SAN, YEO
SIONG FONG, SIM
NOR HADIANI ISMAIL

WONDERS
OF
NATURAL
PRODUCTS
IN
MALAYSIA

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FOREWORD

Sarawak is an ideal state for ecotourism. The richness in biodiversity as well culture diversity provides a wide experience to visitors. There are different themes of ecotourism. Ecotourism revolving around the theme of learning and appreciation can be aligned to the platform created by The Regional Conference & Exhibition on Natural Products, Traditional Medicines and Herbs 2021.



Local communities in Sarawak have been exploiting natural resources for generations. Their traditional knowledge on the application of natural resources in their everyday life is the preliminary reference for scholars to explore further on the different potential usage of the natural resources. In return, not only an acknowledgment of the traditional knowledge, but different stakeholders can also come together to create sustainable ecotourism projects in the theme of learning and appreciation to amplify and boost the income of the local communities. With properly planned activities, visitors may experience the nature where the communities harvested the natural resources, go through an educational trip, and appreciate the cultural value of a community.

This coffee table book, "Wonders of Natural Product in Malaysia" may serve as a trigger and the first motivational force to scholars and innovators of multidiscipline, to work together towards, not only to explore sustainably the potential uses of natural resources, but also to reciprocate or returning the favour to the communities.

YB Dato Sri Haji Abdul Karim Rahman Hamzah
Minister of Tourism,
Arts and Culture Sarawak

FOREWORD

The Regional Conference & Exhibition on Natural Products, Traditional Medicines and Herbs 2021, is a platform for different stakeholders to share



or display their innovations as well as findings. It is hope that this conference will foster interdisciplinary collaboration and create new opportunities. To expand the platform for innovators as well as researchers, this coffee table book, "Wonders of Natural Product in Malaysia" is published in conjunction with this conference, to showcase the diverse sources of natural products, along with their various applications. The editors and the article contributors have organized a selection of innovations and research findings to be shared, diffused and enjoyed by every walks of life.

In addition, this book deliberates on the importance of conserving the biodiversity of Malaysia. Scholars from different disciplines are encouraged to investigate in orchestration, to exploit sustainably natural resources and identify different potential natural products. They are also encouraged to publish research findings and share innovations to the public, to complete the knowledge and innovation cycle.

Mr. Hii Chang Kee
Permanent Secretary, Ministry of Tourism,
Arts and Culture Sarawak Malaysia



PREFACE

Natural products, in chemistry, refers to secondary metabolites or compounds synthesized by living organisms. In a broader sense, natural products also refer to green products i.e., products that are created using only natural ingredients.

In conjunction with the Regional Conference & Exhibition on Natural Products, Traditional Medicines and Herbs 2021, dedicated authors from various organizations and institutions have come together to share their innovations and research findings related to natural products, which allow the editors to produce this book, Wonders of Natural Products in Malaysia.

This book aims to showcase the innovations and potential uses of various valuable plants, microbes and agrowastes in Malaysia. The innovations and research findings published in this book are supported by numerous grants. The editors are grateful to all contributors and hopefully this book will trigger future collaborations between various stakeholders towards sustainable exploration of natural resources in Malaysia.

Freddy Kuok San, Yeo
Siong Fong, Sim
Nor Hadiani Ismail



Antifungal Property of *Curcuma longa*

Rosmawati bt Saat* & Nur Faradiyah Binti Zakaria

* Corresponding author: srosma@unimas.my

Curcuma longa or commonly known as turmeric is a member of ginger family, *Zingiberaceae* which can be found in subtropical and tropical regions, especially in Asian countries. The turmeric powder from rhizomes has been used for flavouring and colouring. Apart from its uses in cooking, turmeric also is applied as a traditional medicine in the Chinese and Ayurvedic systems. Turmeric has been used traditionally for the treatment of such as menstrual pain, jaundice, inflammatory conditions of joints, sore throat, skin allergy and wounds.



Curcuma longa.

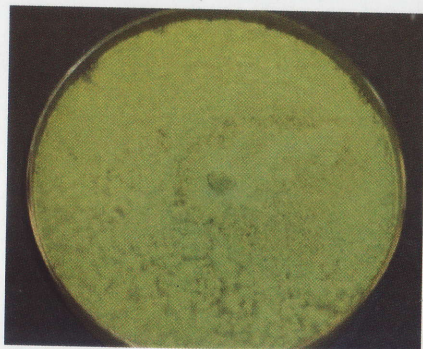


Rhizome.

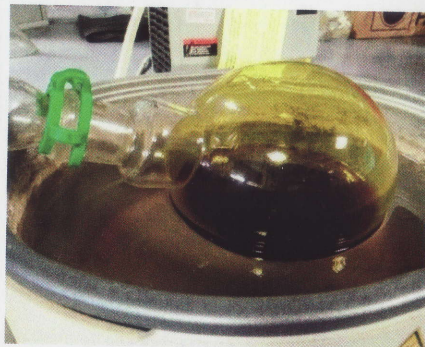


Turmeric powder and sliced rhizome.

The flavonoid compound, curcumin gives the yellow colour of turmeric rhizomes, and this component is important in the anti-inflammatory effects, antimicrobial and antioxidant activity. The turmeric extract is shown to inhibit the growth of *Aspergillus flavus*, a fungus which can cause diseases on several economically important crops, particularly crops containing oil such as peanut, maize and cotton seed. Also, it may cause health problems to humans and animals through inhaling the fungal spores or ingesting fungal toxin-contaminated food or feed. The inhibition of fungal growth by the turmeric extract is indicated by the reduction of *A. flavus* colonies size on the potato dextrose agar. The observation suggests that turmeric has the potential application as a natural agent for fighting against fungus particularly *A. flavus* in crops.



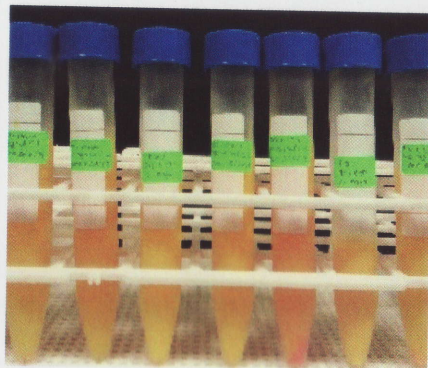
Full grown *A. flavus* on potato dextrose agar.



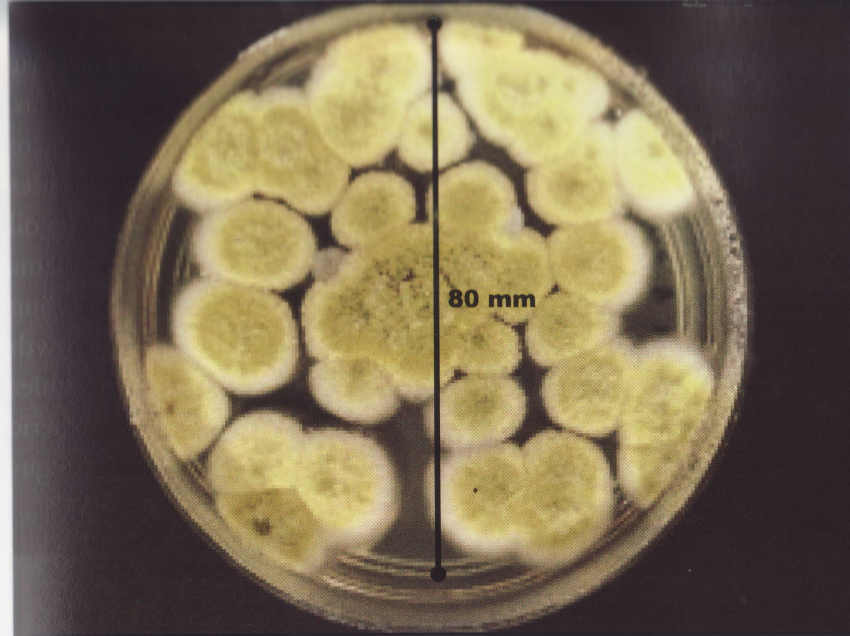
The evaporation process of the crude extract using rotary evaporator.



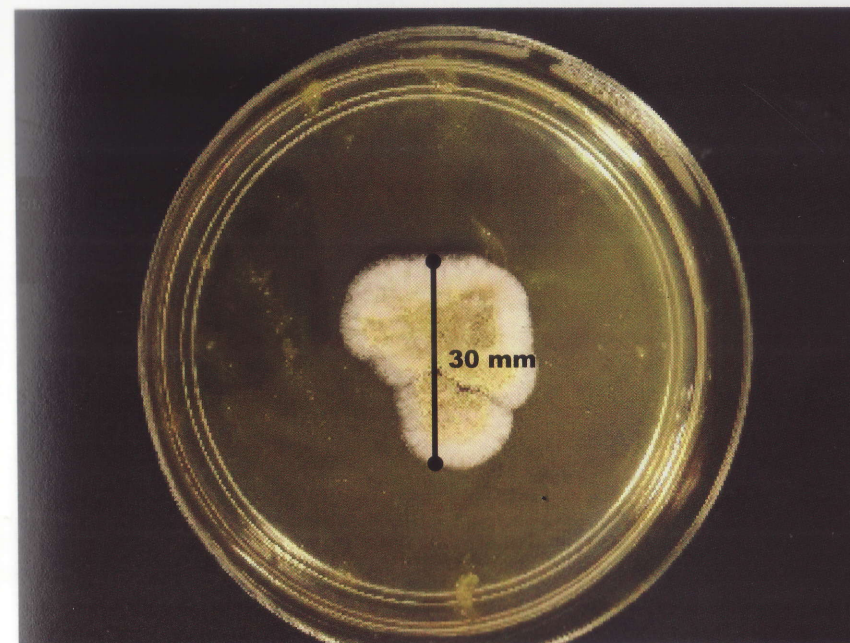
A. flavus under microscope (4x).



Ethanolic extract of turmeric



A. flavus colonies on potato dextrose agar are observed in green colour.



A. flavus growth on potato dextrose with turmeric extract. Reduction of fungal colony size can be observed.

Management and Science University

Alicia Chen Hui, Ng

Swinburne University of Technology, Sarawak Campus

Changi Wong

Moritz Mueller

Universiti Malaya

Khalijah Awang

Universiti Malaysia Sarawak

Fasihuddin Badrudin Ahmad

Kavitha Vijeandran

Mohd Razip Asaruddin

Muhammad Zulkipli Bin Muhammad Shafiq Chen

Nur Faradiyana Binti Zakaria

Rosmawati Binti Saat

Vu Thanh Tu Anh

Universiti Putra Malaysia

Chau Ling, Tham

Khozirah Shaari

Mohamad Shazeli Che Zain

Sharida Fakurazi

Soo Yee, Lee

Universiti Teknologi MARA

Fareiny Binti Morni

Hasmah Binti Mohidin

Heng Yen, Khong

Muhamad Syukrie Bin Hj Abu Talip

Nor Hadiani Ismail

Nur Vicky Bidud

Nurulfazlina Edayah Rasol

Syahrul Imran Abu Bakar

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WONDERS OF NATURAL PRODUCTS IN MALAYSIA

THIS BOOK AIMS TO SHOWCASE THE INNOVATIONS AND POTENTIAL USES OF VARIOUS VALUABLE PLANTS, MICROBES AND AGROWASTES IN MALAYSIA. THE INNOVATIONS AND RESEARCH FINDINGS PUBLISHED IN THIS BOOK ARE SUPPORTED BY NUMEROUS GRANTS. THE EDITORS ARE GRATEFUL TO ALL CONTRIBUTORS AND HOPEFULLY THIS BOOK WILL TRIGGER FUTURE COLLABORATIONS BETWEEN VARIOUS STAKEHOLDERS TOWARDS SUSTAINABLE EXPLORATION OF NATURAL RESOURCES IN MALAYSIA.


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